

Christ Church, limited to persons under nineteen; at Magdalen College, limited to persons under nineteen years on July 2, 1885.

Mr. J. N. Dobie has been elected to a Natural Science Scholarship at Exeter College in Biology and Chemistry.

CAMBRIDGE.—Mr. G. F. Harmer, B.A., of King's College, has been appointed Demonstrator of Comparative Anatomy. Mr. Harmer was placed in the first class of the Natural Sciences Tripos in 1883, being distinguished in Zoology and Comparative Anatomy.

An examination for Entrance and Foundation Scholarships will be held at Gonville and Caius College, beginning on January 9 next. Six Entrance Scholarships, varying in value from 40*l.* to 80*l.*, may be awarded. The successful candidates must come into residence in October 1885. They may be awarded for Classics, Mathematics, or Natural Science, separately or combined. They are tenable for a year, when the holder will be eligible for a Foundation Scholarship. The scholarships may be increased or diminished each year, according to the scholar's performances in the College or University Examinations. Those who distinguish themselves in the Triposes may have their scholarships prolonged after their degree. A successful candidate, who after the examination enters for competition at another College, forfeits *ipso facto* any scholarship for which he may have been recommended. Candidates must be under nineteen years of age on the first day of examination. Undergraduates of the College may at the same examination compete for scholarships, in which case there is no restriction of age. Candidates in Natural Science will be examined in Physics, Chemistry, Biology, and Animal Physiology, and will be expected to show proficiency in at least two of these subjects, of which chemistry must be one. The Rev. A. W. W. Steel, Senior Tutor, will furnish fuller particulars.

Lectures and Demonstrations on Physics and Chemistry in Michaelmas Term: Prof. Stokes, short course on Double Refraction and Polarisation; Mr. Atkinson, Heat and Hydrostatics; Mr. Glazebrook, Electricity (el.), also Advanced Physics; Mr. Shaw, Physics, Elementary and Advanced; Mr. Hart, Mechanics and Heat (1st M.B.); Electricity (Nat. Sci. Tripos, Part I); Practical Physics, Demonstrations and Practical Work at Cavendish Laboratory.

Chemistry: Prof. Liveing, General Course; Prof. Dewar, Dissociation and Thermal Chemistry; Mr. Main, Elementary Organic Chemistry; Mr. Pattison Muir, General Principles, and Elementary Chemistry, especially Metals; Mr. Heycock, General Principles (non-metals).

Demonstrations in Spectroscopic Analysis, Prof. Liveing; Special Demonstrations for Medical Students, Mr. Sell and Mr. Fenton; also Special Demonstrations for Nat. Sci. Tripos, Part I; Mr. Robinson, Demonstrations in Analysis of Food and Water; Practical Work at the University, St. John's, Caius, and Sidney College Laboratories.

Prof. Lewis, Mineralogy and Crystallography; Demonstrations on Minerals, by Mr. Solby.

Prof. Stuart, Mechanism and Applied Mechanics; Mr. Lyon, Rigid Dynamics. The Mechanical Workshops are open from 8 to 1 and 2 to 6 daily.

Geology: Prof. Hughes, Economic Geology and Geological Surveying; Tides, Mr. E. Hill; Stratigraphy, Dr. R. D. Roberts; Palæontology, Echinoidea, Mr. T. Roberts; Constituents of Rocks, Mr. A. Harker. Field Lectures will be specially announced.

Botany, Elementary, with Practical Work, Dr. Vines; Physiology of Plants, Advanced, Dr. Vines.

Zoology and Comparative Anatomy: Prof. Newton, Evolution in the Animal Kingdom; Elementary Morphology (Invertebrata, Mr. Sedgwick; Advanced Invertebrata, Mr. Harmer; Mammalia, Living and Extinct, Osteology, Strickland Curator (Dr. Gadow).

Physiology, Elementary Course, with Practical Work, Prof. Foster; Chemical Physiology, Advanced, Mr. Lea; Advanced Course of Physiology and Histology, Mr. Langley; Preparation for 2nd M.B., Mr. Hill.

Human Anatomy, Muscular System, Prof. Macalister; also Demonstrations of Visceral Anatomy; General Pathology, Prof. Roy; also Practical Class in Morbid Histology.

Advanced Mathematical Lectures: Prof. Stokes, Optics; Prof. Cayley, Recent Developments in Analysis and Geometry; Prof. Darwin, Theoretical Astronomy; Mr. Forsyth, Higher Algebra, Binary Forms; Mr. Hobson, Higher Dynamics; Mr.

Glazebrook, Higher Geometrical Optics; Mr. J. J. Thomson, Electrostatics; Mr. Macaulay, Thermodynamics; Dr. Besant, Theory of Equations, Differential and Integral Calculus; Mr. Lock, Fourier's Series, and Vibrations of Strings and Bars; Mr. Stearn, Hydrodynamics; Mr. Temperley, Laplace's Functions; Mr. Webb, Theory of Attractions and Elasticity, if a sufficient number apply.

THE formal inauguration of the University College of North Wales, Bangor, has been fixed for the 18th inst., and it is expected that the Duke of Westminster, the Earl of Powis, Lord Aberdare, Lord Penrhyn, Mr. Mundella, and other gentlemen, will take part in the proceedings. The fitting up of the new laboratories and lecture theatres for the chemical and physical departments is being rapidly pushed forward, and the buildings include a very complete suite of rooms for the use of each department. An excellent equipment of scientific apparatus has been secured for all branches of chemistry and physics. Mr. George Macgowan, F.R.S.E., formerly of Prof. Fresenius's Laboratory, Wiesbaden, and now of Prof. Kolbe's Laboratory, Leipzig, has been appointed Demonstrator in Chemistry under Prof. Dobbie, and Mr. D. M. Lewis, M.A., Trinity College, Cambridge, Demonstrator in Physics under Prof. Gray.

SOCIETIES AND ACADEMIES

SYDNEY

Linnean Society of New South Wales, July 30.—Dr. James C. Cox, F.L.S., Vice-President, in the chair.—The following papers were read:—Revision of the Lamellibranchiata of New Zealand, by Capt. F. W. Hutton, F.G.S. This is a carefully revised list of all the Lamellibranchiate mollusks of New Zealand, with the corrected synonyms and localities of each species. A list is also given of the names of each genus which had been wrongly included by previous authorities in the New Zealand fauna.—List of some New South Wales Zoophytes identified by Dr. Kirchenpauer, by Baron Sir F. von Mueller, K.C.M.G., F.R.S., &c. The list contains the exact localities of six species of Hydroids and fifteen of Bryozoa collected by Miss Bate on the south-east coast, and Miss Hodgkinson at the Richmond River. They were all detached from sea-weeds, and identified by Dr. Kirchenpauer, Burgomeister of Hamburg.—New Fishes in the Queensland Museum, part iii., by Charles W. De Vis, M.A. Mr. De Vis in this paper goes through the families *Berycidae*, *Scienidae*, *Carangidae*, *Scombridae*, *Trachinidae*, and *Triglidae*, describing in all twenty-three new species, mostly from the coasts of Northern Queensland.—Census of Australian snakes, with descriptions of two new species, by William Macleay, F.L.S. The two new species are named *Dipsas boydii* and *Diemenia atra*, both from the Herbert River District, Queensland. The census gives the names, references, and localities of 108 species of snakes, thirty-five of these being innocuous, and seventy-three venomous. The paper concludes with some remarks on the immunity from snake-bite enjoyed by Australia, as compared with India.—On a new species of kangaroo (*Dorcopsis chalmersii*) from the south-east end of New Guinea, by N. de Miklouho-Maclay. A young kangaroo obtained by N. de Miklouho-Maclay in New Guinea, in 1880, has proved to be (on account of the great size of the premolars, the general shape of the skull, and the direction of the hair on the neck) a new species of *Dorcopsis*, which he describes as *Dorcopsis chalmersii*, Mcl. The specific name, *Chalmersii*, is given in honour of the well-known and distinguished missionary of the south coast of New Guinea. The paper contains a full description of the animal and its dentition.—On a complete debouchement of the sulcus Rolando into the fissura Sylvii in some brains of Australian aborigines, by N. de Miklouho-Maclay. A complete junction of the sulcus Rolando with the fissura Sylvii, which is very rare in brains of our race (a single case only having been described by Prof. Turner), has been found by the author in two out of four brains of Australian aborigines. The junctions of the sulcus Rolando with other sulci are, according to Dr. Maclay, also not uncommon in brains of men of dark races, and occur more frequently than in the brains of men of the white race.—The Australian Hydromedusæ, part v. (conclusion), by R. von Lendenfeld, Ph.D. In this paper the monograph on the Australian Hydromedusæ is brought to a close. All known Australian species are enumerated, with the necessary references, and thirty new species discovered and described by the author are added. The total number of species

is 231. The most interesting of the new species are illustrated. The classificatory system established by the author is used.—Muscular tissue of Hydroid Polyps, by R. von Lendenfeld, Ph.D. A Hydroid Polyp discovered by the author in Port Phillip possesses a singular apparatus for escaping its enemies. This animal was investigated by Dr. R. von Lendenfeld, and a remarkable muscular structure was discovered. The histological structure of this is described, and some general conclusions drawn from the observations on muscular tissue, by O. and R. Hertwig, Claus, and the author.—Notes on the fibres of certain Australian Hiricinidæ, by R. von Lendenfeld, Ph.D. The author discusses the origin of the “filaments,” and describes some new and interesting peculiarities of the Australian Hiricinidæ.—On the Myrtacæ of Australia, by the Rev. W. Woolls, Ph.D., F.L.S. In this paper the author gives tabular statements of the distribution of this large order throughout the globe, but with special reference to its development in Australia. From an examination of these tables, as well as from other considerations, it is clear that West Australia must be regarded as the metropolis of the essentially Australian flora, the plants of the eastern portion of the continent bearing evident relation to Asiatic and Oceanic forms, while those of the west find their nearest, though still very distant, kindred in the yet more distant continent of South Africa.—On marine Annelids of the order Serpulea: observations on their anatomy, with descriptions of the Australian species, by William A. Haswell, M.A., B.Sc. The points treated of are the pseudohæmal system, the segmental organs, the tubiparous glands, budding and hermaphroditism, and the characteristics of the Australian representatives of the order. The arrangement of the vessels in several of the genera is described. Segmental organs of a simple type are shown to exist in addition to tubiparous glands which had been previously regarded as representing the segmental sacs of other *Polychaeta*. Details are given of the structure of the tubiparous glands in a variety of genera.—On a new Crustacea found inhabiting the tubes of *Vermilia*, by William A. Haswell, M.A., B.Sc. In the tube of a Port Jackson *Serpulid* the author found several specimens of a remarkable Isopod, each with a brood of young. It proved to be a form differing in various points from any of the known families, but most nearly related to the Anthuridæ. The young were free in the cavity of the tube, sheltered, however, by fasciculi of hairs fringing the pericœlon of the parent. Like the “normal” Isopoda, and unlike the Anthuridæ, the embryos are flexed in the egg towards the dorsal side; there is a pair of jointed larval appendages connected with the second larval cuticle.—Note on *Pristiophorus cirratus*, by William A. Haswell, M.A., B.Sc. This remarkable genus of sharks was shown to be viviparous, and to possess a rudimentary shell thrown off in the uterus as in *Mustelus*, *Carcharias*, *Galeus*, and *Sphyrna*.

PARIS

Academy of Sciences, October 29.—M. Rolland, President, in the chair.—Note on the total eclipse of the moon on October 4, by M. Mouchez. Owing to its long duration, this eclipse offered a favourable opportunity for more exactly determining the diameter of the moon through the occultation of numerous small stars near the lunar disk. Although the weather was far from favourable, a sufficient number of observations were taken by MM. Périgaud and Bigourdan to advance the solution of this problem considerably. A large number of photographs were also taken by MM. Paul and Prosper Henry. The duration of the eclipse appeared to be rather less than the period theoretically determined.—Note on the experiments recently made at Turin and Lanzo to distribute the electric light to great distances, by M. Tresca. These experiments, carried out by Messrs. Gaulard and Gibbs in connection with the International Electrical Exhibition now being held at Turin, are stated to have been attended by a large degree of success. A Siemens' dynamo-electric machine of 30 horse-power generated an alternate current, which was simultaneously utilised by the Swan, Siemens, and Bernstein systems distributed over a circuit of twenty-four miles between the Exhibition, Lanzo, and intermediate stations.—Note on the nitrates present in plants at the various periods of their vegetable development, by MM. Berthelot and André.—On the explicit solution of Hamilton's quadratic equation in quaternions or in matrices of the second order, by Prof. Sylvester.—A fresh communication on a method of extracting the colouring matter from straw, by M. E. Cadoret, was referred to the previously appointed Commission; and a memoir by M. Goyet, on a project for the construction of a

marine canal between the Atlantic and the Mediterranean was referred to M. de Lesseps for examination.—Results of the observation of the recent lunar eclipse made at the Paris Observatory (equatorial *coudé*), by M. Périgaud.—Note on the same eclipse as observed at the Paris Observatory (equatorial of the West Tower), by M. G. Bigourdan.—Observation of the same eclipse, by M. Trépied.—Observations of Wolf's comet made at the Observatory of Algiers (0.50 m. telescope), by M. Rambaud.—Observations of the new comet, made on September 24, 25, and 26, by M. Perrotin. Under the spectroscope the nucleus yielded a continuous brilliant spectrum crossed by the three usual bands of comets, and by a fourth in the violet, like that observed some months ago in the spectrum of the Pons-Brooks comet.—Observations of the solar spots and faculae during the third quarter of the present year, by M. Tacchini.—Remarks on the solar halos observed at Rome during the last four months (four illustrations), by M. P. Tacchini. This phenomenon, which has been constantly visible at Rome shortly before sunset since the first appearance of the after-glows in November 1883, is stated to resemble in every respect that already described elsewhere by M. Cornu.—Note on the action of water and of nitric acid on the basic acid of the bioxide of tellurium, by MM. Klein and J. Morel.—Note on the experimental study of infectious osteomyelitis, by M. A. Rodet.—On the elimination of phosphoric acid by the urine in cases of mental disorders and epilepsy, by M. A. Lailler.—Geological observations on the section of the Cordilleras traversing the Isthmus of Panama, by M. Ch. Mano. A careful survey of this region in connection with the works now in progress on the Inter-oceanic Canal has satisfied the author that the northern continuation of the Andes system following the double curve of the isthmus throughout its entire length, belongs to a far more recent geological epoch than that of the syenites and serpentines of Choco and Antioquia, whence they appear to branch off. They are also later than the diorites, volcanic and other porphyries of the Costa Rica coast range, which belong to the system of the Rocky Mountains, stretching thence northwards to the Polar Sea. The eruptive rocks of the isthmus seem to be contemporary with the volcanic formations of Auvergne, dating from the Quaternary or the dawn of the present epoch, and containing fossil human remains.

CONTENTS

PAGE

Handbook of Botany	581
Our Book Shelf:—	
Hobkirk's "Synopsis of the British Mosses."—J. G. Baker	582
Wood's "Our Insect Allies"	582
Letters to the Editor:—	
Shifting of the Earth's Axis.—Prof. C. Piazz-Smyth	582
The Sky-Glows.—Robert Leslie; Joseph John Murphy	583
Circular Rainbow.—William P. Marshall	584
To Find the Cube of any Number by Construction.—R. Tucker	584
Explorations in Iceland. By Th. Thoroddsen	584
Storage Batteries	585
Meteorology of the Lower Congo	589
The Recent Eclipse of the Moon. By Otto Boeddicker; E. J. Lowe; George F. Burder. (Illustrated)	589
Notes	591
Our Astronomical Column:—	
The Approaching Appearance of Encke's Comet	594
Variable Stars	594
Southern Binaries	594
On the Seat of the Electromotive Forces in the Voltaic Cell	594
The American Association	596
The Prime Meridian Conference	602
University and Educational Intelligence	602
Societies and Academies	603